

REMARKS/ARGUMENTS

Response to Arguments

The applicant appreciates the examiner's reply to the applicant's prior reasoning in the response filed June 9, 2009. However, the applicant maintains that in at least some respect the office is technically incorrect and that some of the examiner's arguments remain unsupported.

(1) Specifically, with respect to the element that the demethanizer is fluidly coupled to the absorber and configured to receive the ***absorber bottoms product as lean reflux***, the applicant recognizes that the examiner points in Figure 4 of Lee to the absorber (28a) bottom stream that is routed through pump 150, optionally through cooler 26, into the demethanizer 28 via streams 62/62b and 42. However, the applicant disagrees with the examiner's assertion that such stream is a lean reflux for the following reasons: Lee teaches in column 9, lines 47-50 that

"...The main reflux stream can then either be completely fed to the new absorber 28a or a portion of it, stream 44a, will be fed to the new tower and the rest of the reflux, stream 44, will be fed to the existing demethanizer tower, 28..."

In other words, the main reflux stream (94) is a reflux stream that is either fed to the top of the demethanizer via reflux exchanger 26 and JT valve 100 to so act as demethanizer reflux and/or to the top of absorber via reflux exchanger 26 to so act as absorber reflux. Thus, the reflux for the absorber and the demethanizer is provided by stream 94.

In contrast, the absorber bottom product is pumped (not expanded!) to the demethanizer (optionally via reflux exchanger 26) and enters the demethanizer as combined stream 42 at an intermediate position in the demethanizer. Lee teaches in column 9, lines 62-64 that

"...Stream 62a from the reflux exchanger 26 is then fed as stream 62b to the demethanizer 28 after being combined with partially condensed stream 42..."

Clearly, and as can be seen from the above, partially condensed stream 42 cannot act as a reflux stream. To make this point even more explicit, the applicant points to column 6, lines 12-16, and column 6, lines 24-30 where Lee specifically teaches that the:

"...partially condensed stream 42 [has a temperature] at *about -76 °F*. The resulting two-phase stream 42 is then directed to the demethanizer 28 right below the top rectifying section..."

and that the

"...cooled compressed gas from gas/gas exchanger 24 is directed to the reflux exchanger 26 where it is completely condensed and subcooled *to -143 °F*. This subcooled liquid 44 is expanded through the expansion valve 100 prior to being introduced as the main reflux for the top section of the demethanizer 28..."

Consequently, it should be appreciated that ***the temperature of the combined and partially condensed stream 42 (that also includes stream 62a/62b) is entirely insufficient as a reflux stream***, which is further evidenced by the position where the combined stream enters the demethanizer (*i.e.*, below the rectifying section). So far, the examiner has merely restated her prior position that the absorber bottom stream would be a demethanizer reflux stream, however, failed to substantiate such position with support from Lee (or other source). In light of the above, the applicant respectfully requests reconsideration of applicant's position.

(2) With respect to the applicant's prior request for clarification how the proposed modification of Vijayaraghavan using the components of Lee would be implemented without diminishing or obviating Vijayaraghavan, the examiner merely stated that she explained what was taught and what was not taught in the references. However, such reasoning is insufficient. The mere presence of key terms is not enough to properly establish obviousness. Indeed, it is pointed out that "***...particular findings*** must be made ***as to the reason*** the skilled artisan, with no knowledge of the claimed invention, would have selected these components ***for combination in the manner claimed...***" (*In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000)), and that "...there must be some ***motivation, suggestion, or teaching of the desirability*** of making the specific combination that was made by the applicant..." (*In re Dance*, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998)).

In an attempt to satisfy such requirements, the examiner stated that since both references disclose a demethanizer that operates under similar temperature and pressure and that the vapor outlets of the separator enter the upper section of the demethanizer, the teachings of Lee would not diminish or entirely obviate the invention of Vijayaraghavan. The applicant respectfully

disagrees with the examiner as such statement fails to take into account the specific process configurations and conditions associated with the references. More specifically, and assuming that Vijayaraghavan is modified using the teachings of Lee as proposed by the examiner, the applicant requests clarification with respect to:

- The position of the absorber relative to the demethanizer in Vijayaraghavan. Does the absorber receive Vijayaraghavan's reflux stream 32 or the vapor phase from the first separator 6?
- How is the loss of providing refrigeration content that results from direct feeding of the liquid portion into the demethanizer à la Lee compensated for in Vijayaraghavan?
- How is the loss of the reflux stream that results from direct feeding of the liquid portion into the demethanizer à la Lee compensated for in Vijayaraghavan?
- What benefit would be provided to Vijayaraghavan by adding an absorber?

Despite the applicant's prior request for clarification, the office has merely restated the earlier position. Absent a more detailed and concise explanation as to how and why Vijayaraghavan should be modified using the elements of Lee without loss of desired effectiveness, the examiner's rebuttal is not persuasive.

(3) It appears that the examiner rejected all claims in substantially the same manner as in the previous office action with the addition of Finn et al. In support of the combination of the cited art with Finn, the examiner relied on the reasoning that

"...It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a cooled low pressure feed gas having a feed gas pressure of at or below 1100 psig, since gaseous hydrocarbon feeds may have a pressure of at or below 1100 psig, as taught by Finn et al and since it has been held that *where the general conditions of claim are disclosed* in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (see MPEP 2144.05 (II-A)) (emphasis added)..."

Such argument is inapplicable as Finn fails to provide the general conditions of the claim. Indeed, Finn uses an entirely different system as those described in the remaining art. More specifically, Finn employs substantial external refrigeration (rather than internally generated

refrigeration via expansion) and further uses the liquid phase of the feed gas a subcooled column feed. Clearly, Finn fails to present the same general condition. Should the office maintain the position that Finn teaches the same general condition, clarification is respectfully requested.

35 USC §103

The Office rejected **claims 1-3, 5-7, and 16-18** as being obvious over Vijayaraghavan (U.S. Pat. No. 5,566,554) in view of Finn et al. (U.S. Pat. No. 6,363,744) and Lee et al. (U.S. Pat. No. 6,354,105). The applicant respectfully disagrees, especially in view of the arguments provided above. As the present rejection is substantially identical with the prior rejection, except for the addition of Finn, the same considerations as provided in the prior response apply and are incorporated by reference herein. Regarding Finn, the applicant points to the discussion and shortcomings of Finn above. Consequently, the rejection of claims 1-3, 5-7, and 16-18 as being obvious over Vijayaraghavan in view of Finn et al. and Lee et al. should be withdrawn.

The Office also rejected **claim 4** as being obvious over Vijayaraghavan in view of Finn et al. and Lee et al. as applied to claim 1 above and further view of Hoffart et al. (U.S. Pat. No. 6,295,833) and Campbell (U.S. Pat. No. 5,771,712). As the present rejection is substantially identical with the prior rejection, except for the addition of Finn, the same considerations as provided in the prior response apply and are incorporated by reference herein. Regarding Finn, the applicant points to the discussion and shortcomings of Finn above. Consequently, the rejection of claim claim 4 as being obvious over Vijayaraghavan in view of Finn et al. and Lee et al. as applied to claim 1 above and further view of Hoffart et al. and Campbell should be withdrawn.

The Office also rejected **claim 6** as being obvious over Vijayaraghavan in view of Finn et al and Lee et al. as applied to claim 1 above and further view of Buck (U.S. Pat. No. 4,617,039). As the present rejection is substantially identical with the prior rejection, except for the addition of Finn, the same considerations as provided in the prior response apply and are incorporated by reference herein. Regarding Finn, the applicant points to the discussion and shortcomings of

Finn above. Therefore, the rejection of claim 6 as being obvious over Vijayaraghavan in view of Finn et al and Lee et al. and further view of Buck should be withdrawn.

The Office also rejected **claim 19** as being obvious over Vijayaraghavan in view of Finn et al. and Lee et al. as applied to claim 16 above and in view of Campbell. Once again, as the present rejection is substantially identical with the prior rejection, except for the addition of Finn, the same considerations as provided in the prior response apply and are incorporated by reference herein. Regarding Finn, the applicant points to the discussion and shortcomings of Finn above. Therefore, the rejection of claim 19 as being obvious over Vijayaraghavan in view of Finn et al. and Lee et al. and further view of Campbell should be withdrawn.

The Office also rejected **claim 20** as being obvious over Vijayaraghavan in view of Finn et al., Lee et al., and Campbell et al. as applied to claim 19 in view of Buck. As the present rejection is substantially identical with the prior rejection, except for the addition of Finn, the same considerations as provided in the prior response apply and are incorporated by reference herein. Regarding Finn, the applicant points to the discussion and shortcomings of Finn above. Therefore, the rejection of claim 20 as being obvious over Vijayaraghavan in view of Finn et al., Lee et al., and Campbell et al. and further view of Buck should be withdrawn.

The Office rejected **claims 9-10, 12-13, and 15** as being obvious over Vijayaraghavan in view of Finn et al., Buck, and Lee et al. Again, as the present rejection is substantially identical with the prior rejection, except for the addition of Finn, the same considerations as provided in the prior response apply and are incorporated by reference herein. Regarding Finn, the applicant points to the discussion and shortcomings of Finn above. Therefore, the rejection of claims 9-10, 12-13, and 15 as being obvious over Vijayaraghavan in view of Finn et al., Buck, and Lee et al. should be withdrawn.

The Office also rejected **claim 11** as being obvious over Vijayaraghavan in view of Finn et al., Buck and Lee, and as applied to claim 9 above in view of Hoffart and Campbell. Yet again, the applicant again respectfully disagrees. As the present rejection is substantially identical with the prior rejection, except for the addition of Finn, the same considerations as provided in the prior response apply and are incorporated by reference herein. Regarding Finn, the applicant points to the discussion and shortcomings of Finn above. Therefore, the rejection of claim 11 as being obvious over Vijayaraghavan in view of Finn et al., Buck and Lee, and as applied to claim 9 above in view of Hoffart and Campbell should be withdrawn.

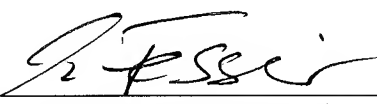
The Office also rejected **claim 14** as being obvious over Vijayaraghavan in view of Finn et al., Buck, and Lee, and as applied to claim 9 above in view of admitted prior art. Again, as the present rejection is substantially identical with the prior rejection, except for the addition of Finn, the same considerations as provided in the prior response apply and are incorporated by reference herein. Regarding Finn, the applicant points to the discussion and shortcomings of Finn above. Therefore, the rejection of claim 14 as being obvious over Vijayaraghavan in view of Finn et al., Buck, and Lee, and further view of admitted prior art should be withdrawn.

Request For Allowance

Claims 1-7 and 9-20 are pending in this application. The applicant requests allowance of all pending claims.

Respectfully submitted,
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